Macrozoobenthos communities in seagrass beds in the Spermonde archipelago, South Sulawesi, Indonesia

Priosambodo, D.[1], Asmus, H.[2], Blankenhorn, S[2], Kneer, D.[2], Liu, H.T.[2], Polte, P.[2] and Schauerte, P.[2]

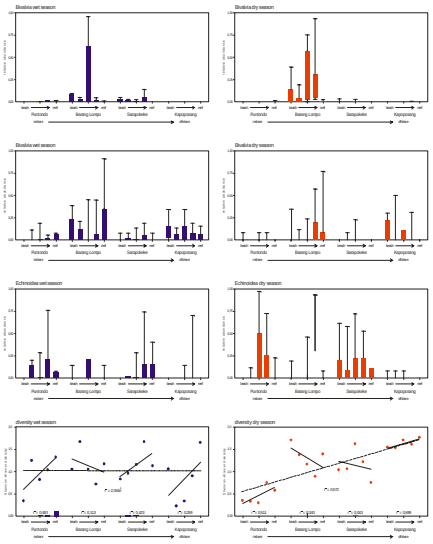
1 Center for Coral Reef Research, Hasanuddin University, Makassar, Indonesia

2 Alfred Wegener Institute for Polar and Marine Research, Wadden Sea Station Sylt, Germany

Science for the Protection of Indonesian Coastal Ecosystems (SPICE-project, BMBF funded)

Macroozoobenthos plays an important role in tropical seagrasss beds. Many shredders of plant material, detritus feeders and decomposers can be found within this group. However, their distribution and biodiversity in Indonesian seagrass beds is widely unknown. In the present study, we investigated the distribution of macrozoobenthos in wet and dry season 2005. Four locations on a transect from "inshore" to "off-shore" conditions in the Spermonde archipelago, South Sulawesi, Indonesia were chosen.

Siltation and percentage of terrigenous sediment decreased along this transect. The middle stations (Pulau Barang Lompo and Pulau Sarapokeke) were small islands with very high population densities. Therefore, the stress on local ecosystems in those locations could be considered high. On the other side, the inshore (Puntondo village) and off-shore locations (Pulau Kapoposang) sustained a small population and natural ecosystems remained relatively undisturbed.

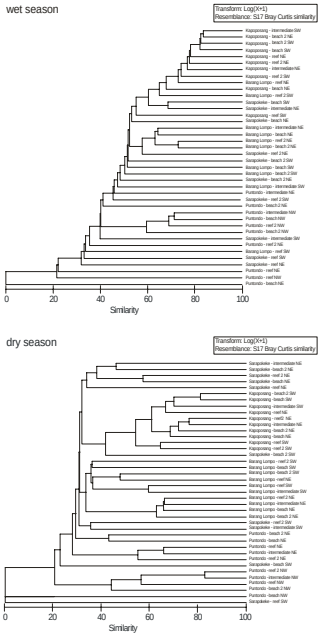


Mussles (Bivalvia) were very abundant in Barang Lompo, especially in the middle section of the seagrass bed. Together with other filter feeders, e.g. sponges (Porifera) they were contributing a high percentage to the animal community. On Kapoposang, only very few mussels were found. Sponges however were abundant on all islands and on Kapoposang they replaced mussles. Sea urchins (Echinoidea) were found in all seagrass beds and their abundance tended to be higher in the dry season. Individual numbers were higher in transects were mussel and sponge abundance was low. Regression of biodiversity (Shannon-Wiener) index in the wet season yielded insignificant results for the inshore – offshore gradient. However, in individual locations there were correlations between biodiversity and distance from the shore. These were more distinct in the dry season and the regression inshore – offshore was significant.

Sponges were one of the main contributors to biodiversity in the seagrass beds

The sea urchin Tripneustes gratilla is characteristic of seagrass beds were it feeds on the vegetation.

Mussels were abundant on some transects. Filter feeders are usually less dominant in seagrass beds.



Each location supported a distinct community of bottom dwelling animals. In the dry season clustering of locations was more distinct than in the wet season. A reason for this might be the more stable environmental conditions in terms of fresh-water run-off and salinity in the seagrass bed. With those stressors present, mobile invertebrates are very likely to avoid unfavourable conditions. During the dry season however, a steady-state of the community might be reached.

Distinct communities on different islands: Caused by polution or local factors?

Local effects, e.g. coral reef degradation and therefore increased wave action and sediment movement on the reef flats seem to be crucial for macrozoobenthos diversity. Preliminary data analysis presented in this poster does not support the hypothesis of pollution caused by the metropolitan area of Makassar to influence macrozoobenthos communities on a large-scale transect.

Further analysis with data on seagrass density, sediment parameters, water quality, fish communities, and coral reef degradation are necessary to obtain a more detailed description of environmental forces determining macrozoobenthos distribution and diversity.

The project is conducted as a co-operation between AWI (H. Asmus, S. Schiel), ZMT Bremen, University of Bremen and Hasanuddin University in Makassar, Sulawesi.